Remarks

I. Claim Amendments

Claim 23 has been canceled. Claims 24 – 27 have been added. Support for the added claims can be found in Figures 1-4.

II. Prior Art related to the new claims

Facey shows two bores however, the second bore has a wedge means. Therefore the second bore is restricted. Pasbrig does not show a second bore. The art currently cited in the case does not show all of the claimed elements.

III. February 14, 2006 Office Action related to Claims 20 -22

Applicant disagrees with the Examiners conclusion that Jim Moon's statements are speculative. It should be clear to any person and would certainly be clear to a person of ordinary skill in the art that:

1) An additional opening in a housing increases the chance of dirt entering the housing.
2) The opening is parallel to the channel where mechanical parts are sliding and if dirt enters into the slot then there is a risk that the sliding part will no longer be able to slide or that it will cause the wedge to cant (See attached Patent No. 6,131,340, column 2 lines 22-27, discussing Wilson Patent No 4,833,829. See attached Patent No. 3,106,738 column 3 lines 22 -26. These patents support the fact that a sliding mechanical part can be fouled by dirt and that an opening increases the chance of dirt entering the sliding portion); and

3) By adding a lever to the wedge means you are adding an additional mechanical part. The more mechanical parts a device has the greater the risk of failure (See attached Patent No. 6,301,787 column 2 lines 10-18).

If the Examiner still considers the evidence provided by Jim Moon as speculative, Applicant request that Examiner give examples of what type of evidence would be required to establish the above points.

- III -
CONCLUSION

In view of the above, it is submitted that the claims now presented in the application are in condition for allowance. Accordingly, reconsideration and allowance of the claims are requested.

Respectfully submitted,

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SLIDING DOOR FOR BOAT CABIN COMPANIONWAY

This is a United States regular utility patent application filed pursuant to 35 U.S.C. § 111(a) and claiming the benefit under 35 U.S.C. 119(e)(1) of the priority of United States Provisional Patent Application Ser. No. 60/073,510 filed Feb. 3, 1998 pursuant to 35 U.S.C. Section 111(b).

FIELD OF THE INVENTION

This invention relates generally to sliding doors and more particularly to a weatherproof sliding door assembly for use with a boat cabin companionway.

BACKGROUND OF THE INVENTION

The use of companionway closures is a very old art and has been commonly used in boat designs for boats of many types. For the class of water craft in the power boat category commonly referred to as "cabin cruisers", as well as pleasure sailing vessels commonly known as "cruising sailboats", primary access from the aft open cockpit area forward into the main cabin typically involves a companionway opening arranged in two planes. A portion of the opening is formed in the generally vertical bulkhead forming the aft wall of the cabin and separating the cabin from the cockpit area. The remaining companionway portion is generally formed in a horizontal or inclined plane as a notch-like large opening in the cabin overhead (ceiling wall). Due to the higher elevation of the cockpit bridge deck or sole (floor) relative to the cabin sole, the vertical dimension of the bulkhead opening is too short to allow standing entryway, and hence the need for the inclined or horizontal opening in the cabin overhead. Typically a sliding or hinged hatch is provided to open and close the companionway overhead, and likewise a hinged door, or sometimes a series of stacked boards, are used to close the bulkhead companionway opening. Such typical and conventional companionway closures are relatively expensive to construct, require a multiplicity of manipulation steps for their operation, and are difficult to seal tight against rain, wave splash water and hose down.

One approach in the prior art in an effort to eliminate problems associated with the aforementioned conventional companionway closures has been to provide a sliding door construction such as disclosed in Wilson U.S. Pat. No. 4,833,829 issued May 30, 1989. This door is constructed as a single panel configured to overlap both the overhead and bulkhead portions of the companionway. Such a sliding door construction eliminates the need for hinges as well as the extra clearance required for swinging hinged doors. The angled upper portion of the sliding door panel eliminates the need for a hinged upper panel or separate sliding hatch construction. The upper and lower edges of the door panel are fastened in "train bodies", each having a pair of four-wheel roller trucks closely tracking and captured in roller grooves formed in an extruded plastic open-slot channel rail.

The Wilson '829 sliding companionway door construction, although providing several advantages over any of the older traditional companionway closure constructions, still presents certain cost and operational problems due to the need to provide relatively close operational clearances between the track grooves and truck wheels. The upper and lower track rails must be carefully mounted on the supporting deck and bulkheads or overhead of the boat hull structure to insure close parallelism between the longitudinal axes of the track. Also the track rails must be mounted properly to align the major planes of the

associated train body and door panel portion mounted therein centered in the track slot and extending perpendicular to the rotational axes of the wheels in order to prevent truck tilting and binding in the track wheel grooves. These rail and door orientation requirements in turn require that the track be securely mounted on a smooth flat surface so that no twist or fore-and-aft camber is imparted to the track throughout its longitudinal extent.

For the foregoing reasons, the Wilson '829 patent prescribes that this sliding door construction is best suited for a boat manufacturer that uses a precision mold to form (from plastic material, e.g., fiberglass) the hull entrance structure surrounding the companionway in order to insure uniformity in the configuration and dimensions of the door rail mounting structure of the boat. The Wilson '829 arrangement also requires the boat manufacturer to specially design into the companionway "surround" a raised weather sealing embossment in addition to seals carried on the top, bottom and both side edges of the sliding door. These special boat construction parameters, of course, entail additional boat manufacturing costs.

Moreover, in operation and use of the Wilson '829 patent sliding door system, the upwardly facing slot openings in the upper and lower track rails serve as dirt and debris catchers such that sand, salt and/or mud can easily enter and clog the wheel grooves in the track and thereby jam the door from sliding freely, or altogether. Removal and replacement of a damaged door panel is also a time consuming operation, and only one close tolerance thickness of door panel can be accommodated by a given installation.

Another prior art companionway sliding door construction is that manufactured and sold by Aluminum 2000, Inc., of Lancaster, Pa. This door assembly is similar to that disclosed in the aforementioned Wilson '829 patent, except that plastic slider glides are substituted for the four-wheel trucks and are permanently secured to the door panel for a close sliding fit in an associated rail groove. Thus, this Aluminum 2000 sliding door, like the Wilson sliding door arrangement, requires precision manufacture of the cabin and bulkhead walls, and must be precision installed so that the mounting hardware does not warp or twist the unit in any way. Failure to do so will cause the door to slide incorrectly and/or cause misalignment problems. Likewise the upper and lower track rails must be secured in close parallelism with the components of the door/glide system. In addition, like the Wilson system, some of the door hardware of the system, such as the strike plate and the door bumper stop, are separate components that must be carefully separately installed to the boat bulkhead structure. Accordingly, installation and operational problems also still remain in terms of door sliding interference from dirt and debris accumulation in the track rails and/or twist or distortion of the rails if mounted on uneven surfaces and/or out of precision alignment.

OBJECTS OF THE INVENTION

Accordingly, among the objects of the present invention are to provide an improved sliding companionway door system for cabin pleasure boats and the like that retains the advantages of the aforementioned prior art sliding companionway door construction in terms of utilizing a single panel door that slides to the side of the companionway entrance and thereby eliminates the usual door hinges, that permits a narrower passageway due to the door being installed outside of the companionway, that eliminates the need for a separate hinged or sliding upper panel or hatch in the cabin overhead,

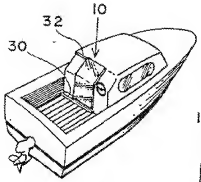


FIG. 1

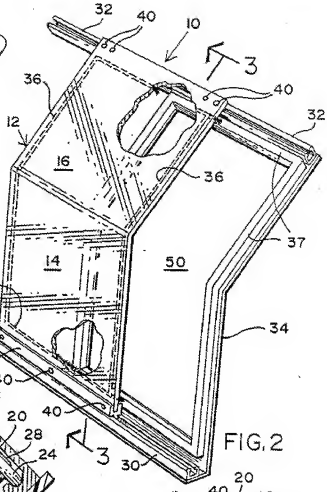


FIG. 2

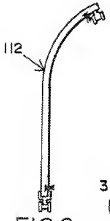
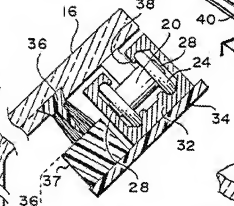


FIG. 6



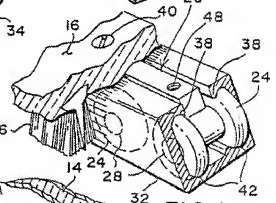


FIG. 4

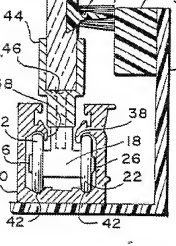


FIG. 3

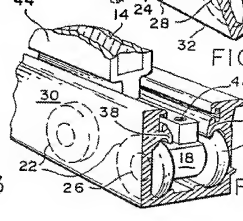


FIG. 5

portion of the stem over the area indicated by the letter A in FIG. 1 of the drawing which prevents further upward movement of the sleeve.

When it is desired to again use the brush, the sleeve 11 is pushed downwardly to a position in which the sides of the flattened portion 12 of the sleeve engages the side portions of the stem as indicated by the area B in FIG. 3. As shown in FIG. 3, the upper portion of the sleeve as it extends downwardly to the Area B is flared outwardly but to a less degree than the stem is flared outwardly and consequently when the flared portion of sleeve 12 reaches the Area B, the side portions of the sleeve engage the stem and prevent further downward movement of the sleeve. In assembling the tool shown in FIGS. 1 to 3, the bristles 10 are inserted in one end of the stem and the stem is flattened by a hammer or vice over a considerable area. The sleeve is then inserted over the stem and its end 12 is flattened over a substantial area as shown in the drawings.

It will be noted that my improved brush is entirely free from springs and consequently it may be constructed at low cost. It is also free from side openings or slots in which filings or other refuse or dirt may accumulate and prevent the free sliding movement of the sleeve and when the sleeve is moved to the position shown in FIG. 1, only the extreme outer end of the sleeve is open. The sleeve in my improved brush is therefore effective in preventing the bristles of the brush from becoming contaminated with filings, dirt, or other refuse.

What I claim is:

A plumber's brush including a tubular stem and bristles, with the adjacent end portions of the bristles extending a short distance into the upper end of the stem which end portion is flattened to hold the bristles in place and the opposite end of said stem being substantially round and having a portion extending between its upper flat portion and its round portion which tapers outwardly, a tubular sleeve surrounding said stem and having an upper flattened end portion which is slidable over the upper flattened end portion of said sleeve and around said bristles to protect the bristles and the solder paste or pipe joint cement thereon from contamination with filings, dirt and other refuse when the brush is not in use and said sleeve having a lower round portion which engages the ends of the flattened portion of the stem to limit outward movement of said sleeve and said sleeve having a portion between its upper flat portion and its round portion which is tapered outwardly but at a less degree of inclination than the stem is tapered outwardly between its flattened end portion and its round portion so that during downward movement of the sleeve the opposite sides of the tapered portion of the sleeve will frictionally engage the opposite tapered sides of the stem to limit downward movement of the tubular sleeve.

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Oct. 15, 1963 L. J. BOHNE 3,106,738

PLUMBER'S BRUSH

Filed April 19, 1962

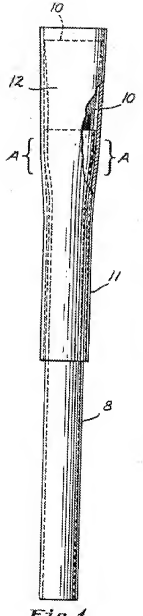

Fig. 1

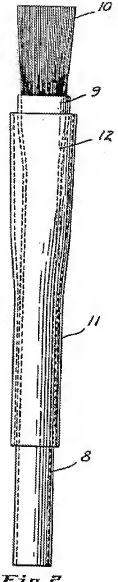

Fig. 2

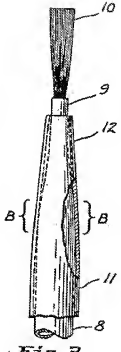

Fig. 3

INVENTOR

Leo J. Bohne

BY John Mahoney

ATTORNEY

SHEAR WITH SLIDING LOCK MECHANISM

FIELD OF THE INVENTION

The present invention relates generally to shears of the type having two blades pivotally connected to one another for movement between open and closed positions and, more particularly, to a locking mechanism for a spring-loaded shear to lock the shear in a closing position.

BACKGROUND OF THE INVENTION

The class of cutting tools known as a shear use two opposed and cooperating cutting edges to apply cutting force to a workpiece. Shears and scissors have a wide variety of uses. Shears and scissors are used for cutting paper, fabric, sheet metal, and many other types of sheet material. Shears are also used in gardening for pruning trees, shrubs, and other plants. Perhaps the most common type of shears is the class of shears having two blades with handles, the blades being pivotally connected at their center for pivotable movement between open and closed positions. This class of shears includes scissors and, therefore, shall be referred to herein as a scissors-type shears.

With scissors-type shears, it is common practice to bias the blades to an open position by means of a spring. With spring-biased shears, the user applies cutting force by squeezing the handles of the shears together, causing the blades to close. When the user relieves pressure on the handle, the spring urges the blades to an open position. Thus, the user is not required to apply force to open the blades of the shears. Spring-biased shears typically include a lock mechanism to maintain the blades in a closed position when they are not in use. Locking the blades in a closed position helps prevent damage to the cutting edges of the shears. Additionally, securing the blades in the closed position reduces the risk of injury because the cutting edges are not exposed when the blades are closed.

Many types of locking mechanisms have been devised in the past to secure the blades of scissors-type shears in a closed position. A common type of locking mechanism used in spring-loaded shears is a pivoting latch. Typically, a latch element is pivotally attached to one handle. The latch element includes a notch that engages with a latch pin on the opposing handle. An exemplary pivoting of latch mechanism is shown in U.S. Pat. No. Des. 406,507. Another common type of locking mechanism is a simple loop or bight element attached to one handle that engages a notch in the opposing handle when the shears are in the closed position. This type of locking mechanism is shown in U.S. Pat. No. 5,063,671. The locking mechanisms described above are relatively simple and inexpensive to manufacture. However, these locking mechanisms require two-handed operation: one hand to apply force to hold the shears in a closed position, and one hand to engage the latch or bight element. Also, while consumers may expect these types of locking mechanisms on inexpensive tools, using these mechanisms on more expensive tools could negatively impact sales since consumers may desire a more elegant locking mechanism in higher-priced tools.

Sliding lock mechanisms are also known for locking shears in a closed position. Examples of shears with sliding lock mechanisms are shown in the patent to Wallace et al., U.S. Pat. No. 4,156,311 and LaBarre et al, U.S. Pat. No. 5,367,774. The patent to Wallace discloses a sliding latch that slides back and forth in a slot formed in one of the handles. The opposing handle has a locking stud. The sliding latch slides into and out of engagement with the locking stud to lock and unlock the shears, respectively. The patent to LaBarre discloses a sliding lock mechanism comprising a pin that passes through aligned slots in the handles of the shears. The pin slides within the slots between locked and unlocked positions. The sliding mechanisms exemplified by these patents achieve the desired goal of one-handed operation. However, the sliding mechanisms of the prior art have various limitations. For example, some sliding mechanisms of the prior art do not retain their position during use and tend to interfere with the operation of the shears. Also, many sliding mechanisms are characterized by relatively complex construction having numerous parts. In general, an increase in the number of parts equates to greater material cost. Further, increasing the number of parts usually makes the assembly of the shears more difficult, further increasing the cost of manufacturing the tool. Additional parts also mean more opportunities for wear or failure, reducing the reliability of the tool.

Accordingly, there is a need for a new locking mechanism that is capable of one-handed operation, is simple in construction, and can be inexpensively manufactured.

SUMMARY OF THE INVENTION

The invention is a spring-loaded shear having a one-piece locking mechanism that can be operated with a single hand. The shear comprises first and second blade assemblies that are connected for pivotal movement between open and closed positions. Each blade assembly includes a cutting blade and a handle. A spring biases the blade assemblies to an open position. A simple, one-piece locking mechanism locks the blade assemblies in a closed position when the shear is not being used to protect the blades against damage and to prevent injury to persons.

In a preferred embodiment of the invention, the locking mechanism comprises a sliding latch that moves between a locked position and an unlocked position. The latch is mounted for sliding movement on one of the handles. In the locked position, the sliding latch engages a catch element on the second handle to lock the blade assemblies in a closed position. In the preferred embodiment of the invention, the sliding latch is a molded, u-shaped member, including a thumb pad and two resilient arms. The latch member mounts to the first handle with the thumb pad disposed on an upper surface of the handle and the resilient arms against lateral surfaces of the handle. The resilient arms include latch elements that engage catch elements disposed on the lateral surfaces of the handle.

Also, in a preferred embodiment of the invention, each of the catch elements includes an inclined, cam surface. The cam surfaces allow the blade assemblies to be closed and locked even when the latch member is in the locked position. When the user attempts to close the blade assemblies with the latch member already in a locked position, the resilient arms engage the cam surfaces on the catch elements. The cam surfaces cause the resilient arms to deflect outwardly and pass over the catch element so that the latch element can engage the catch element. Thus, to close and lock the blade assembly, the user simply slides the latch member forward to a locked position and squeezes the handles together. As the resilient arms pass over the catch element and return to their original position, an audible click is produced, alerting the user that the blade assemblies are securely locked in the closed position.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of the shear according to the present invention in a closed position.